

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Tokumi KOBAYASHI

Serial No : Not Yet Assigned (National Stage of PCT/JP2004/017467)

I.A. Filed : November 25, 2004

For : CIRCUIT SUBSTRATE PRODUCTION METHOD AND
SYSTEM, SUBSTRATE USED THEREIN, AND CIRCUIT
SUBSTRATE USING THE SAME

PRELIMINARY AMENDMENT

Commissioner of Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop _____
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

Prior to the examination of the above-identified patent application on the merits, the Examiner is respectfully requested to amend the claims as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 – 22 (Cancelled)

23. (New) A circuit substrate production method in which a substrate produced by a substrate manufacturer is delivered to a subsequent mounting manufacturer for mounting a component at the mounting manufacturer to thereby produce a circuit substrate, wherein:

a multi-piece substrate is employed which is to be separated into a plurality of pieces at one or each of a plurality of separation levels; each of information recording portions, each of which is provided so as to correspond to each substrate before separation and after separation at each separation level, is configured such that identification information containing information related to management and manufacturing at each of the manufacturers is referenceable and recordable; and the substrate manufacturer records, on each of the information recording portions, identification information formed of information related to the entire substrate and information representing relative relationship about the

separation at each of the separation levels and delivers the substrate to the mounting manufacturer.

24. (New) The circuit substrate production method according to claim 23, wherein information is recorded as a two-dimensional code on the information recording portions.

25. (New) The circuit substrate production method according to claim 23, wherein, in addition to the identification information of each of the substrates themselves, information related to a production step at the substrate manufacturer and information related to a production step at the mounting manufacturer are recorded on the information recording portions at the substrate manufacturer.

26. (New) A circuit substrate production method in which, at a mounting manufacturer, a component is mounted on a substrate which is produced by a substrate manufacturer and is delivered to the subsequent mounting manufacturer to thereby produce a circuit substrate, wherein:

a multi-piece substrate is employed which is to be separated into a plurality of pieces at one or each of a plurality of separation levels; each of information recording portions, which are formed at the substrate manufacturer and each of which is provided so as to correspond to each

substrate before separation and after separation at each separation level, is configured such that identification information containing information related to management and manufacturing in each of the manufacturers is referenceable and recordable; and, at the mounting manufacturer, identification information employed in the mounting manufacturer is recorded on each of the information recording portions on the substrate having the identification information, which is formed of the information related to the entire substrate and the information representing the relative relationship about the separation at each of the separation levels, recorded on each of the information recording portions at the substrate manufacturer.

27. (New) The circuit substrate production method according to claim 26, wherein, at the mounting manufacturer, mounting is performed on the substrate, which has information about a production step at the mounting manufacturer recorded on the information recording portions at the substrate manufacturer in addition to the identification information about each of the substrates themselves, based on the information which is read from the information recording portions and is related to the production step.

28. (New) The circuit substrate production method according to claim 23, wherein production step information about each of the substrates and the identification information read from the information recording portions are combined in the substrate manufacturer and the mounting manufacturer, are transmitted to a data processing center connected via a communication network, and are data-processed in the data processing center to thereby construct various databases, and wherein the substrate manufacturer and the mounting manufacturer perform required processing by retrieving required data from the databases via the communication network.

29. (New) The circuit substrate production method according to claim 26, wherein production step information about each of the substrates and the identification information read from the information recording portions are combined in the substrate manufacturer and the mounting manufacturer, are transmitted to a data processing center connected via a communication network, and are data-processed in the data processing center to thereby construct various databases, and wherein the substrate manufacturer and the mounting manufacturer perform required processing by retrieving required data from the databases via the communication network.

30. (New) The circuit substrate production method according to claim 28, wherein the databases contain information about production histories at both the substrate manufacturer and the mounting manufacturer.

31. (New) A circuit substrate production system in which a multi-piece substrate, which is to be separated into a plurality of pieces at one or each of a plurality of separation levels and has information recording portions each of which is provided so as to correspond to each substrate before separation and after separation at each separation level, is produced at a substrate manufacturer, the substrate produced at the substrate manufacturer being delivered to a subsequent mounting manufacturer, and in which an electronic component is mounted on the substrate at the mounting manufacturer to thereby produce a circuit substrate, wherein:

the information recording portions are configured such that identification information containing information related to management and manufacturing in each of the manufacturers is referenceable and recordable; recording means, which records, on each of the information recording portions of the substrate, identification information formed of information related to the entire substrate and information representing relative relationship about the separation at each of the separation levels,

is provided in the substrate manufacturer; and read-out means, which read information from the information recording portions, is provided in the mounting manufacturer.

32. (New) The circuit substrate production system according to claim 31, wherein the recording means in the substrate manufacturer is configured such that, in addition to the identification information of each of the substrates themselves, information about a production step in the substrate manufacturer and information about a production step in the mounting manufacturer are recorded on the information recording portions.

33. (New) The circuit substrate production system according to claim 31, comprising a data processing center which is connected to the substrate manufacturer and the mounting manufacturer via a communication network and processes data transmitted from the substrate manufacturer and the mounting manufacturer to thereby construct various databases, wherein read-out means and data processing-transmitting-receiving means are provided in the substrate manufacturer and the mounting manufacturer, the read-out means reading out the identification information recorded on the information recording portions of each of the substrates, the data processing-transmitting-receiving means combining production step information about each of the substrates in the substrate

manufacturer and the mounting manufacturer and the identification information to transmit to the data processing center and receiving required data from the data processing center.

34. (New) A multi-piece substrate which has one or a plurality of separation levels and is to be separated into a plurality of substrates in each of the separation levels, wherein:

information recording portions, each of which is provided so as to correspond to each substrate before separation and after separation at each separation level, are configured such that identification information containing information related to management and manufacturing in each of manufacturers is referenceable and recordable; and identification information formed of information related to the entire substrate and information representing relative relationship about the separation at each of the separation levels is recorded on each of the information recording portions.

35. (New) The multi-piece substrate according to claim 34, wherein production histories at both the substrate manufacturer and the mounting manufacturer are recorded on the information recording portions.

36. (New) The multi-piece substrate according to claim 34, wherein, in addition to individual information of the substrates themselves, information required in a production step at the substrate manufacturer and information required in a production step at the mounting manufacturer are recorded on the information recording portions.

37. (New) A circuit substrate which is formed by mounting a component on a substrates formed by separating a multi-piece substrate into a plurality of pieces at one or each of a plurality of separation levels, wherein:

an information recording portion provided in the circuit substrate is configured such that identification information containing information related to management and manufacturing in each of manufacturers is referenceable and recordable; and identification information formed of information common to all the substrates in the multi-piece substrate and information representing relative relationship about the separation at each of the separation levels is recorded on the information recording portion.

38. (New) The circuit substrate according to claim 37, wherein, in addition to the identification information of the substrate itself, information required in a production step at a substrate manufacturer and information required in a production step at a mounting manufacturer are recorded on the information recording portion.

39. (New) A circuit substrate production method, wherein a combination of: production step information and identification information is data-processed in a data processing center to thereby construct various databases, the production step information being transmitted from a substrate manufacturer and a mounting manufacturer via a communication network, the production step information being related to each of substrates each of which is included in a multi-piece substrate separated into a plurality of pieces at one or each of a plurality of separation levels and serves as a substrate before separation and after separation at each separation level, identification information being formed of information related to the entire substrate read from information recording portions provided in the each of the substrates and configured such that identification information containing information related to management and manufacturing in each of the manufacturers is referenceable and recordable, and information representing relative relationship about the separation at each of the separation levels, the combination.

40. (New) The circuit substrate production method according to claim 39, wherein information about production histories at both the substrate manufacturer and the mounting manufacturer is contained in the databases.

41. (New) The circuit substrate production method according to claim 39, wherein information which is retrieved by the substrate manufacturer and the mounting manufacturer via the communication network and is required when required processing is performed is contained in the databases.

42. (New) A circuit substrate production method in which a substrate produced by a substrate manufacturer is delivered to a subsequent mounting manufacturer for mounting a component at the mounting manufacturer to thereby produce a circuit substrate, wherein the substrate manufacturer records identification information on a substrate, which has an information recording portion configured such that identification information containing information related to management and manufacturing in each of the manufacturers is referenceable and recordable, and delivers the substrate to the mounting manufacturer.

43. (New) A circuit substrate production method in which a substrate produced by a substrate manufacturer is delivered to a subsequent mounting manufacturer for mounting a component at the mounting manufacturer to thereby produce a circuit substrate, wherein

when the substrate manufacturer records identification information on a substrate, which has an information recording portion configured such

that identification information containing information related to management and manufacturing in each of the manufacturers is referenceable and recordable, and delivers the substrate to the mounting manufacturer, production step information related to the substrate and the identification information read from said information recording portion are combined at the substrate manufacturer and the mounting manufacturer, are transmitted to a data processing center connected via a communication network, and are data-processed in the data processing center to thereby construct various databases, and in that the substrate manufacturer and the mounting manufacturer perform required processing by retrieving required data from the databases via the communication network.

44. (New) A circuit substrate, wherein: an information recording portion is provided in a substrate; and identification information containing information related to management and manufacturing in each of manufacturers is constructed in the information recording portion so as to be referenceable and recordable.

REMARKS

By the above amendment, claims 1 – 22 have been cancelled and claims 23 – 44 have been added to incorporate the amendments made in the PCT International Application, to delete multiple claim dependency, and to delete the reference numbers. Therefore, no estoppel should be deemed to be associated with this amendment.

If there should be any questions, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
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